



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4  
ATLANTA FEDERAL CENTER  
61 FORSYTH STREET  
ATLANTA, GEORGIA 30303-8960

SEP 17 2018

Mr. Thomas Frick  
Director  
Division of Environmental Assessment & Restoration  
Florida Department of Environmental Protection  
Mail Station 3000  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Dear Mr. Frick:

The U.S. Environmental Protection Agency has completed its review of the document titled *Nutrient TMDLs for Bear Gully Lake (WBID<sup>1</sup> 3009) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion*. The Florida Department of Environmental Protection (FDEP) submitted the Bear Gully Lake Total Maximum Daily Loads (TMDLs) and revised Chapter 62-304, Florida Administrative Code (F.A.C.),<sup>2</sup> including the numeric nutrient criteria (NNC) for the subject water, in a letter to the EPA dated June 13, 2018, as TMDLs and as new or revised water quality standards (WQS) with the necessary supporting documentation and certification by the FDEP General Counsel, pursuant to Title 40 of the Code of Federal Regulations part 131.

The NNC were adopted under Chapter 62-304.505(24) as site-specific numeric interpretations of paragraph 62-302.530(48)(b). As referenced in paragraph 62-302.531(2)(a), the FDEP intends for the submitted NNC to serve in place of the otherwise applicable criteria for lakes set out in paragraph 62-302.531(2)(b). The total nitrogen and total phosphorus TMDLs for Bear Gully Lake would also constitute site-specific numeric interpretations of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b) for this water segment.

The FDEP submitted the Bear Gully Lake TMDLs to the EPA for review pursuant to both Clean Water Act (CWA) sections 303(c) and 303(d) since the TMDLs will also act as Hierarchy 1 (H1) site-specific interpretations of the state's narrative nutrient criterion pursuant to 62-302.531(2)(a)1.a. The EPA acknowledges that by virtue of establishing the TMDLs in chapter 62-304, the FDEP is also establishing an H1 interpretation of the narrative nutrient criterion for this waterbody as new or revised WQS. The enclosed, combined WQS and TMDL decision document summarizes the EPA's review and approval of the WQS and TMDLs.

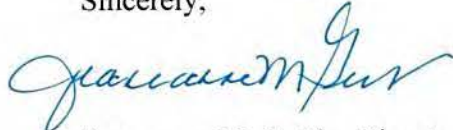
<sup>1</sup> WBID refers to waterbody identification

<sup>2</sup> Unless otherwise stated, all rule and subsection citations are to provisions in the Florida Administrative Code.

In accordance with sections 303(c) and (d) of the CWA, I am hereby approving the TMDLs promulgated in Chapter 62-304 for Bear Gully Lake as both a TMDLs and as revised WQS for total nitrogen and total phosphorus. Any other criteria applicable to these waterbodies remain in effect, especially those related to chlorophyll *a* in paragraph 62-302.531(2)(b). The requirements of paragraph 62-302.530(48)(a) also remain applicable.

If you have any comments or questions relating to the approval of the H1 WQS or TMDLs, please contact me at (404) 562-9345, or have a member of your staff contact Dr. Katherine Snyder in the WQS program at (404) 562-9840 or Ms. Laila Hudda of the TMDL program at (404) 562-9007.

Sincerely,

A handwritten signature in blue ink, appearing to read "Jeaneanne M. Gettle".

Jeaneanne M. Gettle, Director  
Water Protection Division

Enclosure

cc: Mr. Kenneth Hayman, FDEP  
Mr. Daryll Joyner, FDEP  
Ms. Erin Rasnake, FDEP



# **Florida Numeric Interpretation of the Narrative Nutrient Water Quality Criterion Through Total Maximum Daily Loads (TMDLs) to Establish a Hierarchy 1 (H1): Joint Water Quality Standards (WQS) and TMDL Decision Document**

**H1:** Nutrient TMDL for Bear Gully Lake (waterbody identification (WBID) 3009)

**ATTAINS TMDL ID:** FL68602

**Location:** Seminole County, Florida

**Status:** Final

**Criteria Parameter(s):** For WBID 3009, the H1 establishes 23,166 pounds per year (lbs/yr) for total nitrogen (TN) and 1,387 lbs/yr for total phosphorus (TP) expressed as 7-year annual averages loads, not to be exceeded, for the TMDL allocation and water quality criteria.

**Impairment/Pollutant:** One waterbody (see next page) in the Middle St. Johns Basin in southern Seminole County is not meeting water quality criteria for TN and TP and not supporting the designated use of Class III Freshwater, which includes fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. An H1 was submitted by the Florida Department of Environmental Protection (FDEP) that establishes site-specific criteria for TN and TP and provides loads to address the impairment.

**Background:** The FDEP submitted the final H1 for the *Nutrient TMDL for Bear Gully Lake (WBID 3009)* (the “report”) by letter dated June 13, 2018. The draft report for Bear Gully Lake is dated August 2017 and was received on August 29, 2017. The final H1 report dated March 2018 includes site-specific criteria and a TMDL expressed as loads. A final H1 report was received on June 25, 2018.

The submission included:

- Submittal letter
- *Nutrient TMDL for Bear Gully Lake (WBID 3009) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion*
- Documents related to Public Workshop
- Documents related to Public Hearing
- Documents related to Public Notice for Rulemaking and Rule Adoption
- Public Comments Received and Responses

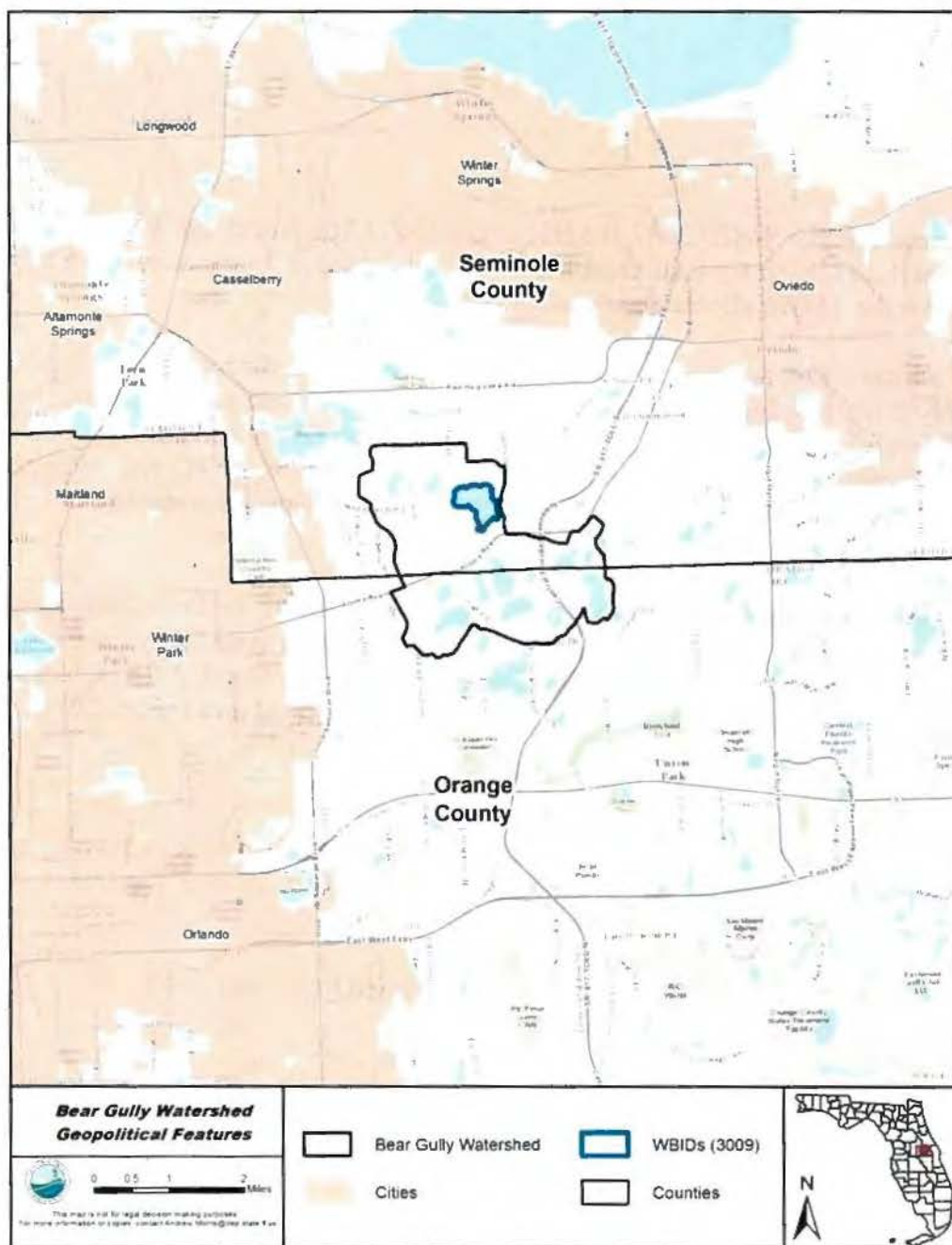
This document explains how the submission meets the Clean Water Act (CWA) statutory requirements for the approval of WQS under section 303(c) and of TMDLs under section 303(d), and the EPA’s implementing regulations in Title 40 of the Code of Federal Regulations (40 CFR) parts 131 and 130, respectively.

**REVIEWERS:** WQS: Jamal Cooper, Environmental Engineer, [cooper.jamal@epa.gov](mailto:cooper.jamal@epa.gov)  
TMDL: Margaret Stebbins, Life Scientist, [stebbins.margaret@epa.gov](mailto:stebbins.margaret@epa.gov)

**Waterbodies addressed in this H1 Approval Action:**

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|                 |           |           |
|-----------------|-----------|-----------|
| Bear Gully Lake | WBID 3009 | 137 acres |
|-----------------|-----------|-----------|



**Figure 1.** Location of Bear Gully Lake and major hydrologic features in the area

*This document contains the EPA's review of the above-referenced H1. This review document includes WQS and TMDL review guidelines that state or summarize currently effective statutory and regulatory requirements applicable to this*



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*approval action. Review guidelines are not themselves regulations. Any differences between review guidelines and the EPA's implementing regulations should be resolved in favor of the regulations themselves. The italicized sections of this document describe the EPA's statutory and regulatory requirements for approvable HIs. The sections in regular type reflect the EPA's analysis of the state's compliance with these requirements.*

### I. WQS Decision – Supporting Rationale

*Section 303(c) of the CWA and the EPA's implementing regulations at 40 CFR section 131 describe the statutory and regulatory requirements for approvable WQS. Set out below are the requirements for WQS submissions, under the CWA and the regulations. The information identified below is necessary for the EPA to determine if a submitted WQS meets the requirements of the CWA and, therefore, may be approved by the EPA.*

#### 1. Use Designations

*Section 131.10(a) provides that each state must specify appropriate water uses to be achieved and protected. The classification of the waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the United States.*

**Assessment:** Bear Gully Lake is classified as Class III Freshwater (fish consumption; recreation; and propagation and maintenance of a healthy, well-balanced population of fish and wildlife).

#### 2. Protection of Downstream Uses

*Section 131.10(b) provides that in designating uses of a waterbody and the appropriate criteria for those uses, the state shall take into consideration the WQS of downstream waters and shall ensure that its WQS provide for the attainment and maintenance of the WQS of downstream waters.*

Rule 62-302.531(4) of the Florida Administrative Code (F.A.C.) requires that downstream uses be protected. Bear Gully Lake discharges into Bear Gully Creek, which flows into Howell Creek system, which in turn discharges north into Lake Jesup and then St. Johns River. Bear Gully Creek and Howell are Class III freshwater streams in the Peninsular Stream Nutrient Region for numeric nutrient criteria (NNC). The applicable NNC for these stream systems are 0.12 mg/L of TP, 1.54 mg/L of TN, and 20 µg/L of chlorophyll *a* (Chl*a*), expressed as annual geometric means (AGMs) not to be exceeded more than once in any 3-year period. During the most recent Cycle 3 assessment period for the Group 2 basins, the Chl*a* and TP AGMs did not exceed the default NNC in any year for both Bear Gully Creek and Howell Creek. The TP AGMs did not exceed the TP numeric nutrient threshold for streams in any year during the assessment period for Howell Creek. However, TP AGMs did exceed the TP numeric nutrient threshold for streams more than once in a three-year period during the assessment period in Bear Gully Creek, and the waterbody was added to the Study List for continued monitoring. Additionally, there was available Stream Condition Index (SCI) data which indicated that Howell Creek supported a healthy biological community. Biological monitoring results from several surveys taken during the Cycle 3 verified period and in more recent years indicate that there are no floral imbalances and there is healthy fauna in Bear Gully Creek. The FDEP has determined that if the data show biological health is fully supported in a stream, it may be concluded that the associated nutrient regime is inherently protective of the waterbody, and the stream NNC is achieved. Additional data will continue

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to be collected to confirm the biological health of the streams during the Cycle 4 assessment period, which ends on June 30, 2019.

The Lake Jesup nutrient TMDL required a 50% reduction in nitrogen and a 34% reduction in phosphorus loads from the entire Lake Jesup watershed, which corresponds to TN, TP, and Chla concentrations of 1.32 mg/L, 0.094 mg/L, and 30.5 µg/L. The TN and TP concentrations that correspond to the TN and TP loads for Bear Gully Lake are 0.83 and 0.05 mg/L, respectively, and the target Chla concentration is 20 µg/L. Since the restoration concentrations for Bear Gully Lake are lower than the NNC for the Lake Jesup TMDL, the Bear Gully Lake TMDL nutrient reductions meet or exceed the reduction goals set forth by the Lake Jesup TMDL.

Based on these assessment results, as evidenced by the healthy existing conditions in the downstream receiving water, the existing nutrient loads from Bear Gully Lake to Bear Gully Creek and Howell Creek have not led to an impairment of the downstream water and are not preventing downstream waters from attaining its designated uses and maintaining a balanced aquatic flora and fauna. Additionally, the Bear Gully Lake TMDL nutrient reductions meet or exceed the reduction goals for the Lake Jesup TMDL. The reductions in nutrient loads described in this TMDL analysis are not expected to cause nutrient impairments downstream and will result in water quality improvements to downstream waters.

**Assessment:** The H1 is providing use protection for the downstream waters.

### 3. Water Quality Criteria

*Section 131.11(a) provides that states must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.*

The FDEP used the Tropic State Index (TSI) to determine that Bear Gully Lake was impaired for nutrients during the Cycle 1 verified period. At the time the Cycle 1 assessment was performed, Bear Gully Lake was classified as a high-color lake and the TSI threshold of 60 was exceeded. In the Cycle 2 verified period, Bear Gully was classified as a low-color lake, and the lake remained on the Verified List because its annual mean TSI value of 40 was exceeded. Subsequent lake reclassifications and assessments indicated that the NNC were also not being met based on Chla AGMs that exceeded the nutrient threshold of 20 µg/L more than once in a 3-year period. To establish the nutrient targets for Bear Gully Lake, the FDEP used the generally applicable 20 µg/L Chla criterion as a target because this level is considered protective of the designated use of this high-color lake. See 62-302.531(2)(b), F.A.C.

To determine site-specific TN and TP targets for the TMDL, the FDEP used a modeling approach to relate simulated watershed TN and TP loads to simulated ambient TN and TP lake concentrations. The watershed simulation was conducted using the Hydrologic Simulation Program – FORTRAN (HSPF) watershed loading model to simulate loading. This information was fed into individual receiving water models' Environmental Fluid Dynamics Code (EFDC) and Water Quality Analysis Simulation Program (WASP) for the lake. The HSPF model simulates the hydrology and water quality conditions in the watershed. The EFDC model simulates hydrodynamics, and the WASP model simulates water quality in Bear Gully Lake. The three models were used together to represent the watershed loading and the resulting conditions in Bear Gully Lake. The HSPF model allowed the FDEP to interactively simulate and assess the environmental effects of various land use changes and associated land use practices. The

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model impact parameters simulated for the Bear Gully Lake watershed include water quantity (surface runoff, interflow, and baseflow), and water quality (TN, organic nitrogen, ammonia nitrogen, nitrogen oxides, TP, organic phosphorus, orthophosphorus, phytoplankton as biologically active Chla, temperature, total suspended solids, dissolved oxygen, and ultimate carbonaceous biological oxygen demand).

In order to express the target as a water quality standard in a manner consistent with the default NNC target Chla concentration of 20 µg/L, the TN and TP loads from anthropogenic sources were incrementally reduced until the Chla target was achieved in every year of the modeling period. For the TP and TN load reduction scenarios, the TN and TP loads were iteratively reduced at the Boundary Scale Factor until the AGMs of simulated Chla did not exceed the target of 20 µg/L in any single year. Rolling 7-year averages were applied to the distribution of yearly TN and TP loads, and the maximum of the resulting 7-year averages of TN and TP loads were chosen as the site-specific interpretations of the narrative nutrient criterion and were calculated based on the 20% TN and 18% TP anthropogenic reduction scenario. A 7-year period is consistent with the time frame used to assess waters for impairment of designated uses (See Chapter 62-303, F.A.C.). The nutrient TMDLs and site-specific numeric nutrient interpretation expression for Bear Gully Lake are the maximum of the rolling 7-year averages of annual loads applied in the load reduction model scenario.

***Assessment:***

The Bear Gully Lake TMDL allocation and NNC is 23,166 lbs/yr for TN and 1,387 lbs/yr for TP expressed as 7-year annual average loads, not to be exceeded. The loads were derived from watershed models corresponding to the target Chla concentration of 20 µg/L. The TN and TP represent the simulated in-lake TN and TP concentrations corresponding to the target Chla concentrations of 20 µg/L. The TN and TP concentrations are 0.83 mg/L for TN and 0.05 mg/L for TP expressed as AGMs. The concentrations are given for comparative purposes only. The criteria are expressed as loads. The resulting water quality will protect the designated uses for this waterbody. Any other criteria applicable to this waterbody remain in effect, including the nutrient criteria for parameters set out in 62-302.531(2)(b) F.A.C.

**4. Scientific Defensibility**

*Section 131.11(b) provides that, in establishing criteria, states should establish numerical values based on 304(a) guidance, 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods.*

Bear Gully Lake was verified for impairment for nutrients based upon TSI data during the Cycle 1 verified period (January 1, 1996–June 30, 2003) and subsequent assessments indicated that the generally applicable Chla NNC were also not being met. This TMDL document based the TN and TP criteria on the generally applicable Chla criterion of 20 µg/L for high-color lakes including Bear Gully Lake. The loads of 23,166 lbs/yr for TN and 1,387 lbs/yr for TP, expressed as 7-year annual averages loads not to be exceeded, were derived from watershed models to achieve the Chla criterion of 20 µg/L. These values correspond to in-lake concentrations of 0.83 mg/L for TN and 0.05 mg/L for TP expressed as long-term average AGMs. The concentrations are given for comparative purposes only. The resulting water quality is expected to protect the designated uses for this waterbody.



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**Assessment:** The EPA determined that the selection of a Chla value of 20 µg/L as the response variable target is appropriate and the technical approach to calculate the total watershed nutrient loads results is scientifically sound. These approaches which include the HSPF watershed loading model and EFDC and WASP model to calculate the total watershed nutrient loads are described in the cited TMDL document.

## **5. Public Participation**

*Section 131.20(b) provides that states shall hold a public hearing when revising WQS, in accordance with provisions of state law and the EPA's public participation regulation (40 CFR part 25). The proposed WQS revision and supporting analyses shall be made available to the public prior to the hearing.*

A public workshop was conducted by the FDEP on September 29, 2017, in Casselberry, Florida, to obtain comments on the draft nutrient TMDL for Bear Gully Lake. The workshop notice indicated that the nutrient TMDLs, if adopted, constitute site-specific numeric interpretations of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that would replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for these particular waters. The FDEP also held a public hearing on February 9, 2018, in Tallahassee, Florida.

**Assessment:** The FDEP has met the public participation requirements for this H1.

## **6. Certification by the State Attorney General**

*Section 131.6(e) requires that the state provide a certification by the state Attorney General or other appropriate legal authority within the state that the WQS were duly adopted pursuant to state law.*

A letter from the FDEP General Counsel, Robert A. Williams, dated June 13, 2018, certified that the Bear Gully Lake TMDL was duly adopted as WQS pursuant to state law.

**Assessment:** The FDEP has met the requirement for Attorney General certification for this H1.

## **7. Endangered Species Section 7 Consultation**

*Section 7(a)(2) of the Endangered Species Act (ESA) requires federal agencies, in consultation with the Services, to ensure that their actions are not likely to jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of designated critical habitat of such species.*

The existing default NNC for the waterbody received concurrence by U.S. Fish and Wildlife Service (USFWS) on July 31, 2013. Because the site-specific TP and Chla criteria for Bear Gully Lake in this report are within the default criteria, an additional ESA section 7 consultation for this standards action is not required.

USFWS provided concurrence with the EPA's programmatic consultation on site-specific nutrient criteria for the FDEP on July 21, 2015, for any site-specific nutrient criteria that are more stringent than the existing default nutrient criteria in place in the state of Florida for the waterbody. Because the site-specific TN criterion in this report for Bear Gully Lake are more stringent than the default criteria, an additional ESA section 7 consultation for this standards action is not required.



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***Assessment:*** The EPA has met the ESA requirements for this action.

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## **II. TMDL Review**

*Section 303(d) of the CWA and the EPA's implementing regulations at 40 CFR Part 130 set out the statutory and regulatory requirements for an approvable TMDL. The following information is generally necessary for the EPA to determine if a submitted TMDL fulfills the legal requirements for approval under section 303(d) and the EPA regulations and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.*

### **1. Description of Waterbody, Pollutant of Concern, and Pollutant Sources**

*The TMDL analytical document must identify the waterbody as it appears on the state's 303(d) list, including the pollutant of concern. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for the EPA's review of the load and wasteload allocations, which is required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments or Chla and phosphorus loadings for excess algae.*

Bear Gully Lake has a surface area of 137 acres and the watershed covers an area of 3,847 acres, spanning both Seminole and Orange Counties. As mentioned in Section I-3 of this document, Bear Gully Lake was verified as impaired for nutrients and was added to the section 303(d) list in 2004. It is currently still on the section 303(d) list. No permitted National Pollutant Discharge Elimination System (NPDES) wastewater facilities that discharge to Bear Gully Lake were identified in the watershed. Two NPDES Municipal Separate Storm Sewer System (MS4) Phase I permits impact the Bear Gully Lake watershed: one that covers Seminole County and the Florida Department of Transportation (FDOT) District 5 (FLS000038), and one that covers Orange County and FDOT District 5 (FLS000011).

As mentioned in Section 4.3 of the Report, nonpoint sources addressed in the analysis primarily include loadings from surface runoff, ground water seepage entering the lake, and precipitation directly onto the lake's surface (atmospheric deposition). The dominant land use type in the watershed was medium-density residential, which covered 1,612 acres and accounted for 42% of the total watershed area. The second largest land use type, water, encompassed 612 acres and accounted for 16% of the watershed area. The third largest land use type, industrial and commercial, occupied 436 acres of land and accounted for 11% of the total watershed area. Overall, anthropogenic land uses, including all the residential, commercial, industrial, and agricultural areas, occupied 2,692 acres of the watershed and accounted for 70% of the total watershed.

**Assessment:** The EPA concludes that the FDEP has adequately identified the impaired waterbodies, the pollutant of concern, and the magnitude and location of the pollutant sources.

### **2. Description of the Applicable WQS and Numeric Water Quality Target**

*The TMDL submittal must include a description of the applicable state WQS, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the statewide antidegradation policy. Such information is necessary for the EPA's review of the load and wasteload allocations which is required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable WQS is*

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*attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site-specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.*

As described in Sections I-1 and I-3 of this document, Bear Gully Lake is a Class III (fresh) waterbody subject to the narrative nutrient criterion in paragraph 62-302.530(48)(b), F.A.C. and the generally applicable NNC at paragraph 62-302.531(2)(b)1., F.A.C. The FDEP believes that the lake-specific NNC established in this report are more representative of natural conditions in the lake than the generally applicable TN and TP NNC. This action does not revise the generally applicable NNC.

The TN and TP concentration targets, which are 0.83 mg/L and 0.05 mg/L respectively, were derived based on the background condition of modeling results for the nutrient concentrations needed to achieve the generally applicable Chla criterion of 20 µg/L. Using the water quality models, the FDEP established the nutrient loads and target TN and TP concentrations that attain the target Chla criterion. The nutrient loads of 23,166 lbs/yr for TN and 1,387 lbs/yr for TP are the site-specific numeric interpretations of the narrative nutrient criterion for Bear Gully Lake. The detailed process for developing the applicable water quality standard and the water quality targets is explained in Chapters 3 and 5 of the TMDL report and is also summarized in Section I-3 above.

**Assessment:** The EPA concludes that the FDEP has properly addressed its WQS when setting a numeric water quality target.

### 3. Loading Capacity - Linking Water Quality and Pollutant Sources

*As described in the EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. The EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating WQS (40 CFR section 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 CFR section 130.2(i)). The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for the EPA's review of the load and wasteload allocations which is required by regulation.*

*In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 CFR section 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet WQS. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of WQS and will help in identifying the actions that may have to be undertaken to meet WQS.*

As described in Section I-3 of this decision document, a calibrated model-based prediction was used to estimate the TP and TN loads necessary to achieve the Chla concentration in the Bear Gully Lake watershed (further details are in Chapter 5 of the Report). The HSPF model was used for the Lake Jesup watershed, which was originally set up and calibrated by the St. Johns River Water Management District (SJRWMD). The Bear Gully Lake subwatershed information from the larger Lake Jesup HSPF model was used in the development of the Bear Gully Lake TMDLs. In addition, Tetra Tech developed EFDC and WASP models for Bear Gully Lake to simulate in-lake hydrodynamics and water quality, respectively. The HSPF model simulates the hydrology and water quality conditions, the EFDC model



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simulates hydrodynamics, and the WASP model simulates water quality. The three models were used together to represent the watershed loading and the resulting conditions in Bear Gully Lake.

The natural land use background conditions for the Bear Gully Lake watershed were established to ensure that the site-specific target does not abate the natural background condition. The TMDL condition loads for TN and TP were used in the derivation of the nutrient TMDL values to be used as the site-specific interpretations of the narrative nutrient criterion for TN and TP, as described in Section 3.3 of the Report. For Bear Gully Lake, 20% reduction in the existing TN loads and an 18% reduction in the existing TP loads are necessary to meet the Chla criterion. The nutrient TMDL values, expressed as a 7-year average load, address the anthropogenic nutrient inputs that contribute to the exceedances of the Chla criterion. The TMDLs for TN and TP are 23,166 lbs/yr and 1,387 lbs/yr, respectively. Further details of the relationship between nutrient loadings, in-lake nutrients, and Chla concentrations and of the models used in establishing the relationship and arriving at the TMDLs for Bear Gully Lake are all covered in Chapter 5 of the TMDL report.

The estimated assimilative capacity is based on annual conditions rather than critical seasonal conditions because the methodology used to determine assimilative capacity does not lend itself well to short-term assessment; the FDEP is generally more concerned with net change in overall primary productivity in the segment, which is better addressed on an annual basis; and the methodology used to determine impairment is based on annual conditions (AGMs or arithmetic means).

**Assessment:** The EPA concludes that the loading capacity, having been calculated using the EPA-reviewed water quality models and using observed concentration data and water quality targets consistent with numeric water quality criteria, has been appropriately set at a level necessary to attain and maintain the applicable WQS. The H1 is based on a reasonable approach for establishing the relationship between pollutant loading and water quality.

#### **4. Load Allocation (LA)**

*The EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 CFR section 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 CFR section 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.*

*If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable WQS, and all nonpoint and background sources will be removed.*

To achieve the LA, current TN and TP loads require a 20% and 18% reduction, respectively. As the TMDLs are based on the percent reduction in total watershed loading and any natural land uses are held harmless, the percent reductions for anthropogenic sources may be greater. It should be noted that the LA includes loadings from stormwater discharges regulated by the FDEP and the water management districts that are not part of the NPDES stormwater program (see Appendix A of the Report).

**Assessment:** The EPA concludes that the LAs provided in the TMDL report are reasonable and will result in attainment of the WQS.

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## **5. Wasteload Allocation (WLA)**

*The EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 CFR section 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable WQS, and all point sources will be removed.*

*In preparing the WLAs, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. However, it is necessary to allocate the loading capacity among individual point sources as necessary to meet the WQS.*

*The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the state will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.*

The only NPDES-permitted discharges identified in the Bear Gully Lake watershed that discharge directly to surface waters are stormwater discharges. There are two NPDES Phase I MS4 permits that cover stormwater collection systems in the Bear Gully Lake watershed: Orange County and FDOT District 5 (FLS000011) and Seminole County and FDOT District 5 (FLS000038). Areas within their jurisdiction in the Bear Gully Lake watershed are responsible for a 20% reduction in TN and a 18% reduction in TP from the current anthropogenic loading. As the TMDLs are based on the percent reduction in total watershed loading and any natural land uses are held harmless, the percent reduction for only anthropogenic sources may be greater. No NPDES-permitted wastewater discharges were identified in the Bear Gully Lake watershed.

**Assessment:** The EPA concludes that the WLAs provided in the TMDL report are reasonable and will result in the attainment of WQS. This is because the H1 accounts for all point sources discharging to impaired segments in the watershed and the WLAs require that TN and TP loads comply with the TMDL targets.

## **6. Margin of Safety (MOS)**

*The statute and regulations require that a TMDL include a margin of safety to account for any lack of knowledge concerning the relationship between load and wasteload allocations and water quality (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)). EPA 1991 guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.*

The Report stated that an implicit MOS was used in the development of the Bear Gully Lake TMDLs, consistent with the recommendations of the Allocation Technical Advisory Committee in 2001. The implicit MOS was used because the TMDLs were based on the conservative decisions associated with a number of the modeling assumptions in determining the assimilative capacity (i.e., loading and water quality response) for Bear Gully Lake.

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The TMDLs were developed using water quality results from both high- and low-rainfall years. Additionally, the TMDL nutrient load targets are established as annual limits not to be exceeded based on the development of site-specific alternative water quality targets and were derived based on the Chla criterion being met in every year of the model simulation. These provide a MOS for achieving the restoration goal, which is a Chla concentration of 20 µg/L expressed as an AGM, not to be exceeded more than once in any consecutive 3-year period.

**Assessment:** The EPA concludes that the H1 incorporates an adequate margin of safety.

#### **7. Seasonal Variation**

*The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)).*

The model simulated the 2003 to 2014 period, which included both wet and dry years. The simulation period captures the hydrologic variability of the Bear Gully Lake system. As previously described in Section II-3 of this document, the estimated assimilative capacity is based on annual conditions rather than critical or seasonal conditions because the methodology used to determine assimilative capacity does not lend itself very well to short-term assessments. The FDEP is generally more concerned with net change in overall primary productivity in the segment, which is better addressed on an annual basis, and the methodology used to determine impairment is based on annual conditions (AGMs or arithmetic means).

**Assessment:** The EPA concludes that seasonal variations were considered and that the H1 allocations ensure protection of WQS throughout all seasons.

#### **8. Monitoring Plan to Track TMDL Effectiveness**

*EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions, and such a TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDLs are occurring and leading to attainment of WQS.*

Seminole County and the FDEP conduct routine monitoring of Bear Gully Lake. The data collected through these monitoring activities will be used to evaluate the effect of best management practices (BMPs) implemented in the watershed on lake TN and TP loads in subsequent water quality assessment cycles.

Additionally, Bear Gully Lake is located in the Jesup Lake Basin Management Action Plan (BMAP), which was adopted in May 2010. The key elements addressed by the Lake Jesup BMAP include the following: documenting how the public and other stakeholders were encouraged to participate or participated in developing the BMAP; equitably allocating pollutant reductions in the basin; identifying the mechanisms by which potential future increases in pollutant loading will be addressed; documenting management actions or projects to achieve the TMDLs; documenting the implementation schedule, funding, responsibilities, and milestones; and identifying monitoring, evaluation, and a reporting



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strategy to evaluate reasonable progress over time. The adopted Lake Jesup BMAP and associated annual progress reports are available online at the FDEP BMAPs website.

**Assessment:** Although not a required element of the EPA's TMDL approval process, the FDEP indicated that several stakeholders would be carrying out monitoring activities in Bear Gully Lake, which would help to gauge the progress toward attainment of WQS. The EPA is taking no action on the monitoring plan.

## **9. Implementation Plans**

*On August 8, 1997 Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs Regions to work in partnership with states to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that Regions assist states in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in the TMDLs for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management processes used in the TMDL process. Although implementation plans are not approved by the EPA, they help establish the basis for the EPA's approval of the TMDL.*

As specified in the H1, Florida implements statewide regulations to address the issue of nonpoint source pollution by requiring new development and redevelopment to treat stormwater before it is discharged. The stormwater treatment requirements are integrated with other stormwater flood control requirements of the water management districts. The State's water management districts are also required (Chapter 62-40, F.A.C.) to establish stormwater Pollution Load Reduction Goals (PLRGs) and adopt them as part of a Surface Water Improvement and Management plan, other watershed plan, or rule.

As mentioned above in Section II-8 of this document, Bear Gully Lake is located in the Jesup Lake BMAP which was adopted in May 2010 and is a TMDL implementation tool that integrates the appropriate management strategies applicable through existing water quality protection programs. The Jesup Lake BMAP describes the management strategies that will be implemented as well as funding strategies, project tracking mechanisms, water quality monitoring, and the fair and equitable allocations of pollution reduction responsibilities in the watershed. The most important component of the BMAP is the list of management strategies to reduce pollution sources, as these are the activities needed to implement the TMDLs. The local entities that will conduct these management strategies are identified in the BMAP and their responsibilities are enforceable. The adopted Lake Jesup BMAP and associated annual progress reports are available online at the FDEP BMAP webpage.

**Assessment:** Although not a required element of the TMDL approval, the FDEP discussed how information derived from the TMDL analysis process will be used to develop and implement BMPs that support implementation of the TMDL. The EPA is taking no action on the implementation portion of the submission.

## **10. Reasonable Assurances**

*The EPA guidance calls for reasonable assurances when the TMDL is developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the*

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*nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for the EPA to determine that the load and wasteload allocations will achieve WQS.*

*In a waterbody impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, FDEPs are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in state implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."*

There are two NPDES Phase I MS4 permits that cover stormwater collection systems in the Bear Gully Lake watershed: Orange County and FDOT District 5 (FLS000011) and Seminole County and FDOT District 5 (FLS000038). The WLA for NPDES stormwater discharges was set as the same percent reduction required to achieve the TMDLs as for the other conventional nonpoint sources, or 20% for TN and 18% for TP.

Bear Gully Lake is located in the Jesup Lake BMAP and is therefore currently included in the BMAP restoration activities. Many stakeholders in the Jesup Lake BMAP, including Orange County, Seminole County, and SJRWMD, have completed research projects or are currently implementing studies that will contribute to restoration activities in the watershed. These activities are a good indication of the stakeholder interest and commitment in restoring Bear Gully Lake. The FDEP BMAPs webpage contains the Lake Jesup BMAP and progress reports.

**Assessment:** The EPA considered the reasonable assurances contained in the Report. Point sources are required to comply with their NPDES permits, which must include the requirements and assumptions of the H1. Reductions for nonpoint sources are expected to occur as a result of the incentive and voluntary programs that were already in place or will be developed as part of the BMAP with active participation of its stakeholders.

## 11. Public Participation

*The EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each state must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 CFR section 130.7(c)(1)(ii)). In guidance, the EPA has explained that the final TMDL submitted to the EPA for review and approval must describe the state's public participation process, including a summary of significant comments and the state's responses to those comments. When the EPA establishes a TMDL, EPA regulations require the EPA to publish a notice seeking public comment (40 CFR section 130.7(d)(2)).*

*Inadequate public participation could be a basis for disapproving a TMDL; however, where the EPA determines that a state has not provided adequate public participation, the EPA may defer its approval action until adequate public participation has been provided for, either by the state or by the EPA.*

The FDEP published a Notice of Development of Rulemaking on April 6, 2015, to initiate TMDL development for impaired waters in the Middle St. Johns River Basin. Technical workshops for the Bear Gully Lake TMDLs were held on April 13, 2017, to present the general TMDL approach to local stakeholders. A rule development public workshop for the TMDLs was held on September 29, 2017. A 30-day public comment period was provided to the stakeholders. Public comments were received for the TMDLs, and the FDEP prepared a responsiveness summary for the comments. The FDEP published an updated Notice of Development of Rulemaking on January 17, 2017, covering the Middle St. Johns

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River Basin to address the need for TMDLs to be adopted within 1 year after the Notice of Development of Rulemaking is published.

A public workshop was conducted by the FDEP on September 29, 2017, in Casselberry, Florida, to obtain comments on the draft nutrient TMDL for Bear Gully Lake. The workshop notice indicated that the nutrient TMDLs, if adopted, constitute site-specific numeric interpretations of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that would replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for these particular waters. The FDEP also held a public hearing on February 9, 2018, in Tallahassee, Florida.

Written comments for Bear Gully Lake were received from several entities. The comments requested clarification on general waterbody classification, MS4 permittee responsibilities, model development, event mean concentration and runoff coefficient calculations, and water level and discharge data. The FDEP addressed the comments, as appropriate, in the revised TMDL report.

**Assessment:** The EPA concludes that the State involved the public during the development of the H1, provided adequate opportunities for the public to comment on the Report, and provided reasonable responses to the comments received.

## **12. Submittal Letter**

*A submittal letter should be included with the TMDL analytical document and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to the EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under section 303(d) of the CWA for the EPA review and approval. This clearly establishes the state's intent to submit, and the EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody and the pollutant(s) of concern.*

**Assessment:** Accompanying the State's final TMDLs for nutrients was a submittal letter dated June 13, 2018, from Robert A. Williams, General Counsel, requesting the review and approval of the nutrient TMDLs for: Lake George, St. Johns River above Ocklawaha River, St. Johns River below Lake George, Lake Adair, Lake Alma, Lake Searcy, and Bear Gully Lake.



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### **III. Conclusion**

The Water Protection Division is **APPROVING** the H1 NNC and TMDLs addressed by this decision document in accordance with sections 303(c) and 303(d) of the CWA, as consistent with the CWA and 40 CFR parts 131 and 130, respectively.

The H1 NNC presented in this decision document will constitute the site-specific numeric interpretation of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that will replace the otherwise applicable numeric criteria for TN and TP in subsection 62-302.531(2) for this particular water, pursuant to paragraph 62-302.531(2)(a)1.b., F.A.C. Based on the chemical, physical, and biological data presented in the development of the H1 NNC outlined above, the EPA concludes that the revised NNC for TN and TP provide for and protect healthy, well-balanced, biological communities in the waters to which the NNC apply and are consistent with the CWA and its implementing regulations at 40 CFR 131.11.

Therefore, the revised nutrient criteria for TN and TP for Bear Gully Lake are 23,166 lbs/yr for TN and 1,387 lbs/yr for TP expressed as 7-year averages of annual loads, not to be exceeded. All other criteria applicable to this waterbody remain in effect, including other applicable criteria at 62-302.531(2)(b), F.A.C. The requirements of paragraph 62-302.530(48)(a), F.A.C. also remain applicable.

Furthermore, after a full and complete review, the EPA finds that the H1 for Bear Gully Lake for TN and TP satisfies all the elements of approvable TMDLs. This approval is for the *Nutrient TMDLs for Bear Gully Lake (WBID 3009)* addressing one waterbody for use impairments due to nutrients based on elevated Chla.